



# TECHNOLOGIES OF TOMORROW: A GEOPOLITICAL GATEWAY TO A MULTI-POLAR WORLD ORDER AND INDIA'S OPPORTUNITIES AND CHALLENGES IN IT

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## ABSTRACT

This paper argues how technology will serve as a key gateway into a world with several poles. It further discusses the opportunities in favor of India to guarantee its position in the emerging power structure. And, the various obstacles that India has on its path to be a stable and developed economy. With the unchallenged hegemony enjoyed by The United States wearing thin by the day, increasing vulnerabilities sprout in the contemporary world order backed by its supremacy across domains. Technological advancement has consistently been a distinguishing factor in determining geopolitical power dynamics through the ages. It has historically paved the way for military superiority and political hegemony. The US's dominance following the Cold War is waning. There's a concurrent rise of the Eastern wing and the Global South as a whole. Emerging technologies like Quantum Computing, Artificial Intelligence, 5G, and Blockchain could further expedite the process. Rising powers are competing to deploy these across various potentially disruptive fields, set to usher us into a multi-polar world order. The rebalancing forces, concentrated mainly in Asia, are challenging axioms, redefining conventional notions, and renegotiating terms of engagement in a world more globally interconnected than ever. China and India make two re-emerging civilization giants with contrasting state apparatuses and value systems but similar objectives of securing for themselves a more assertive, sovereign, and determined place in the Global order. India in its 76th year of Independence finds itself amidst a host of opportunities and challenges unleashed by the unraveling of the established order, supply-chain disruptions, and a new round of geostrategic churn in its proximal theaters.

**KEYWORDS:** BRICS, Economy, Military, Multi-Polar World, Self-Reliance, Technology

## INTRODUCTION

Technology is once again at the heart of the stream of changes in the world order. Innovation in the 21st century is accelerating and rapidly evolving in the scope and nature of its application. Breakthroughs in Quantum Computing, AI, 5G, and Space-Tech hold the key to gaining a competitive advantage as well as opportunities for global cooperation.

Innovation in a globalized world makes it imperative to conceptualize and nurture international platforms of cooperation, standardization, and arbitration. By underperforming on this front, the international community risks getting entrapped into crises like Climate accelerated calamities, supply-chain disruptions following the COVID-19 pandemic, etc. As connected as the world is today, there is little room and fewer gains to be made in the type of zero-sum games that were a feature of the Cold-War era. Thus, how India navigates through these challenges and capitalizes upon these opportunities shall determine its place on the international table. Gaining a certain degree of comparative advantage in emerging technologies through revamped Research and Development (R&D) is a necessary condition to safeguard our sovereignty as a state and promise a prosperous future to our citizens. India's capacity to sustain itself, particularly during difficult times, will ultimately determine if it can comprehend its objective of developing a sustainable economy.

## BRICS- an alliance to accomplish a shared vision

The BRICS (Brazil, Russia, India, China, and South Africa) are a crucial group that brings together the world's leading rising economies. According to World Bank Data 2019, they account for 41% of the world's population, 24% of its GDP, and more than 16% of global trade. With time, the USA's grip on a unipolar globe is eroding. The BRICS countries have historically been the main forces behind economic progress on a global scale. In a more globalized society, it is essential to create and maintain global platforms for collaboration. The global community is at risk of being affected by tragedies like those exacerbated by climate change, supply-chain disruptions brought on by the COVID-19 pandemic, etc. To accomplish a shared objective, interregional connections are required. Therefore, India's position at the international table will rely on how it gets through these challenges and seizes these opportunities.

But this alliance of economic hotspots has some challenges of its own. This group of nations is highly diversified in various departments. On the one hand, democratic nations like Brazil, India, and South Africa contrast with authoritarian ones like Russia and communist ones like China. Also, China already is way ahead of the rest of the group as far as economic growth is concerned. Additionally, the conflict along the borders of the neighboring states and instances of past rivalries amongst them hinders the ability of these nations to work together, decreasing the group's overall capacity to pursue their common objective

of a multi-polar world order.

### Indian Military and Artificial Intelligence (AI)

The modernization of the military and dependence on indigenous defense technology is important in the twenty-first century. The dangers to national security have multiplied, and combat tactics are evolving as well. Defense now encompasses not just physical, but also cyber, economic, and social domains. Defense strategies for the country cannot be developed in the same way as before. Now, one has to anticipate future challenges and work accordingly.

The militaries are rapidly adopting Artificial Intelligence (AI) and Automation technology to reduce attrition, increase efficiency, and maneuver harsher terrains. The most crucial factor in determining a nation's ability to wage effective war now is technology. Unmanned Aerial Vehicles (UAVs), War bots, and shifting to Cyber and Electronic Warfare are preliminary glimpses into the changing nature of war. Global powers are being inspired by the AI incarnation to get ready to control and use cutting-edge technologies to achieve their domination in the global power struggle. The superiority of artificial intelligence is the new paradigm of power among superpowers. Promoting domestic military research, developing manufacturing capacity, and indigenization of components are precursors to standing up to these challenges. Every nation must be self-sufficient in terms of defense today.

India has traditionally possessed one of the most powerful militaries. But does it improve over time? Are the weapons used by the troops periodically upgraded? Nations today invest a surplus amount of money in the defense budget, especially when it comes to incorporating AI. India too has increased its defense budget over the last few years. This budget is being used to develop self-reliance in the defense sector. Additionally, as the Prime Minister of India, Narendra Modi, said in his address at the NIIO Seminar "Swavlamban" in New Delhi, we must connect prestigious universities like the IITs, NITs, IIITs, etc. with defense research and development. He continued by saying that it is crucial to develop more and more indigenous technology initiatives like BrahMos and organizations dedicated to indigenous development like iDEX and TDAC, among others. Further efforts must be made to provide opportunities to the youth and various start-ups by providing them with the cutting-edge facilities of DRDO and ISRO. A faster transition from the biggest defense importer to a major exporter is what India requires and aspires.

### Data Protection

Today, data is the commodity that is most in demand. Militarily, a state with superior capability to tap into government or civil society's data of its adversary can exploit it to subvert it through sub-conventional tactics, and sabotage defense or civilian networks.

There has been an increase in cases of cyber-espionage instances, which includes illegitimate abstraction of data and Intellectual Properties (IPs). This kind of preachment is cheap and sometimes just a piece of cake for today's hackers. What

makes matters worse is that it is very difficult to track and catch the offenders, and conviction rarely comes into the picture. The hacking of the website of the Prime Minister's Office in 2011 and the compromise of 12,000 email accounts belonging to government employees in 2012 were India's most severe cyber-espionage incidents (as reported by Phil Muncaster in The Register). Anurag Thakur, India's Minister of Information and Broadcasting claimed that between 2017 and 2018, hackers gained access to more than 600 central government social media accounts. In 2017, 175 accounts were compromised, followed by 114 in 2018, 61 in 2019, 77 in 2020, and 186 in 2021.

Protecting domestic data, especially in sensitive domains like finance, national security, etc is essential to hold ground in the cyber frontier. Data and information can be used as the deadliest weapons. And National defense is no longer limited to borders. Developing these capacities and coherently accommodating such tactics in India's broader defense strategy is required.

### 'Aatmanirbhar Bharat'

The Covid-19 pandemic has disturbed the global supply chains and caused grave disruptions in the nation's economy. And what made matters worse was the friction in Ukraine. It resulted in price hikes for essentials like food, fertilizers, and energy. Striving for self-sufficiency in key technological solutions in line with the 'Aatmanirbhar Bharat' Vision is a hedge that can push India on a secure trajectory in a technological environment world being increasingly contested and predated upon by Silicon Valley and China. It can shield India from the domineering advances of the great-power game, preserve its sovereignty, and multiply its leverage on many fronts. But that shouldn't isolate us or prevent us from joint innovation opportunities. In the wake of developments at the Line of Actual Control, India is proactively pushing to collaborate on specific technological goals with a diversity of partners as part of a comprehensive vision of protecting and strengthening its territorial integrity, freedom of navigation, and sphere of influence.

Being a democracy with a track record of active employment with the world, well integrated into the global market, gives India an advantageous position in sitting together and drafting the standard terms of engagement. In domains like Artificial Intelligence and Climate Change, India has a big role to play in jointly defining the norms and developing a common approach to tackle international challenges like overcrowding of space and Climate Change through technology. As a bridge between the developing and the developed world, between West and East, and as a leading representative of the Global South, India is uniquely positioned for a deterministic role in defining the future techno-political environment. The nascent deployment of 5G and gray areas in the ethical use of Quantum Computing also require thorough international participation backed by sound domestic research by Techno-democracies like India. As we move towards more connected and shriveled societies across the world, the values that India has long stood for will require innovation and willingness to engage on its end to preserve.

### CONCLUSION

Emerging technologies are expediting our pivot into a multi-

polar world. The urgent requirement is to forge interregional alliances that would catalyze balancing the power dynamics among various economically developing nations. India has to make significant investments in military-technology integration. It should employ cutting-edge technology to establish its dominance in the war for global supremacy. India must concentrate on achieving maximum self-sufficiency. Additionally, it needs to be prepared for unforeseen events like epidemics and jarring wars. As a vibrant democracy with a rapidly developing economy and a civilization giant, India is uniquely positioned to define the rules of the game for preserving values that it has historically held dear. In the face of new and quickly evolving challenges, the window for securing its position amidst this turmoil is slim, but the opportunities to demonstrate strength and capacity are plenty.

## REFERENCES

1. "World Bank. 2019. The World Bank Annual Report 2019: Ending Poverty, Investing in Opportunity. Washington, DC: World Bank. © World Bank. <https://openknowledge.worldbank.org/handle/10986/32333> License: CC BY-NC-ND 3.0 IGO."
2. Panda, Jagannath P. *India-China relations: politics of resources, identity and authority in a multipolar world order*. Routledge, 2016.
3. Naik, Shraddha. "Rising brics: a Path to multipolar world Oreality?" *Сравнительная политика* 9.1 (2018): 100-108.
4. Levinson, Marc. "The box." *The Box*. Princeton University Press, 2016.
5. Lee, Kai-Fu. *AI Superpowers: China, Silicon Valley, and the new world order*. Houghton Mifflin, 2018.
6. Jaishankar, S. "The India way: Strategies for an uncertain world." New Delhi (2020).
7. PIB Delhi. "English Rendering of PM's Address at NIIO Seminar 'Swavlamban' in New Delhi." Press Information Bureau, 18 July 2022, <https://pib.gov.in/PressReleaseDetailm.aspx?PRID=1842492>
8. Rajeswari Pillai Rajagopalan and Trisha Ray. "Emerging and Critical Technologies: New Frontiers for an Aspirational India." ORF, 7 Feb. 2022, <https://www.orfonline.org/expertspeak/emerging-and-critical-technologies-new-frontiers-for-an-aspirational-india/>.
9. "Takshashila Discussion Document – Building India's Quantum Ecosystem." The Takshashila Institution, 2022.
10. Saran, Samir. "Digital Democracies and Virtual Frontiers: How Do We Safeguard Democracy in the 4IR?" ORF, 13 Dec. 2021, <https://www.orfonline.org/expert-speak/digital-democracies-and-virtual-frontiers-how-do-we-safeguard-democracy-in-the-4ir/>.
11. Kuehn, Andreas. "The Road to an Evenly Distributed Tech Future Should Put the Needs of the Global South Front and Centre." ORF, 11 Nov. 2021, <https://www.orfonline.org/expert-speak/the-road-to-an-evenly-distributed-techfuture/>.
12. Rasser, Martijn. "The Case for an Alliance of Techno-Democracies." ORF, 11 Nov. 2021, [www.orfonline.org/expert-speak/the-case-for-an-alliance-of-techno-democracies/](https://www.orfonline.org/expert-speak/the-case-for-an-alliance-of-techno-democracies/).
13. McNeill, William Hardy, and William McNeill. *Plagues and peoples*. Anchor, 1998. Piot, Peter. *No time to lose: a life in pursuit of deadly viruses*. WW Norton Company, 2012.
14. DoD, U. S. "Department of defense strategy for operating in cyberspace." July. <https://csrc.nist.gov/CSRC/media/Projects/ISPAB/documents/DOD-Strategy-for-Operating-in-Cyberspace.pdf> (2011).
15. Weissbrodt, David. "Cyber-conflict, cyber-crime, and cyber-espionage." *Minn. J. Int'l L.* 22 (2013): 347.
16. Helbig, Robert. *Nato-India: prospects of a Partnership*. NATO Defense College, 2012.
17. Muncaster, Phil. "10,000 Indian Government and Military Emails Hacked • the Register." 10,000 Indian Government and Military Emails Hacked • the Register, 21 Dec. 2012, [https://www.theregister.com/2012/12/21/indian\\_government\\_email\\_hacked](https://www.theregister.com/2012/12/21/indian_government_email_hacked).
18. "641 Social Media Accounts of Central Govt Hacked in Last 5 Years, 2021 Saw Highest Such Incidents - Times of India." The Times of India, 6 Apr. 2022, <https://timesofindia.indiatimes.com/business/india-business/641-social-media-accounts-of-central-govt-hacked-in-last-5-years-2021-saw-highest-such-incidents/articleshow/90670569.cms>.